

CLAIMS

1. An arrangement comprising:

first means for shifting energy received at a first wavelength and outputting said shifted energy at a second wavelength, said second wavelength being a secondary emission of energy induced by a primary emission generated from said first wavelength by said first means and

5 second means disposed in functional alignment with said first means for containing said primary emission and enhancing said secondary emission thereby.

2. The invention of Claim 1 wherein said second means includes first and second reflective means.

3. The invention of Claim 2 wherein said first and second reflective means have high reflectivity at a wavelength of the primary emission.

4. The invention of Claim 2 wherein said first reflective means has high reflectivity at said second wavelength of the secondary emission.

5. The invention of Claim 2 wherein said second reflective means is at least partially transmissive at said second wavelength with a predetermined reflectivity at a wavelength of the secondary emission.

6. The invention of Claim 5 wherein said predetermined reflectivity is about forty-six percent.

7. The invention of Claim 2 wherein said first and second reflective means are first and second mirrors.

8. The invention of Claim 7 wherein said first and second mirrors are fabricated from CaF_2 substrate.

9. The invention of Claim 1 wherein said first means is a crystal.

10. The invention of Claim 9 wherein said crystal is X cut.

11. The invention of Claim 9 wherein said crystal is Y cut.

12. The invention of Claim 9 wherein said crystal is potassium titanyl arsenate.

13. The invention of Claim 12 wherein said first wavelength is approximately 1.06 microns, said second wavelength is approximately 2.59 microns and said primary emission includes energy at 1.53 microns.

14. The invention of Claim 12 wherein said first wavelength is approximately 1.06 microns, said second wavelength is approximately 3.76 microns and said primary emission includes energy at 1.53 microns.

15. The invention of Claim 1 wherein said first means is angle tunable.

16. An optical parametric oscillator comprising:

a crystal adapted to shift energy received at a first wavelength and output said shifted energy at a second wavelength, said second wavelength being a secondary emission of energy induced by a primary emission generated from said first wavelength by said crystal and

a mechanism disposed in functional alignment with said crystal for containing said primary emission and enhancing said secondary emission thereby.

17. A mechanism for outputting energy comprising:

a laser for generating energy at a first wavelength and

an optical parametric oscillator for shifting the energy output by said laser, said optical parametric oscillator including:

- 5 a crystal adapted to shifting energy received from said laser at a first wavelength and outputting said shifted energy at a second wavelength, said second wavelength being a secondary emission of energy induced by a primary emission generated from said first wavelength by said crystal and
- 10 a mechanism disposed in functional alignment with said crystal for containing said primary emission and enhancing said secondary emission thereby.

18. A method for efficiently generating energy at a desired second wavelength including the steps of:

generating energy at a first wavelength;

shifting the energy and outputting said shifted energy at a second wavelength,

- 5 said second wavelength being a secondary emission of energy induced by a primary emission generated from said first wavelength and
- containing said primary emission and enhancing said secondary emission.